

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	BOX PATENT APPLICATION
)	
Bernard DREVILLON et al)	Group Art Unit: Not Assigned
)	
Application No.: Not Assigned)	Examiner: Not Assigned
)	
Filed: August 6, 2001)	
)	
For: METHOD FOR REAL-TIME)	
CONTROL OF THE FABRICATION)	
OF A THIN-FILM STRUCTURE BY)	
ELLIPSOMETRIC MEASUREMENT)	
)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination on the merits, kindly amend the above-identified
application as follows:

IN THE SPECIFICATION:

Page 1, above the first line, please insert:

--METHOD FOR REAL-TIME CONTROL OF THE FABRICATION OF A
THIN-FILM STRUCTURE BY ELLIPSOMETRIC MEASUREMENT

BACKGROUND OF THE INVENTION

Field of the Invention--.

Page 1, before line 5, please insert:

--Description of the Related Art--.

Page 5, before line 7, please insert:

--SUMMARY OF THE INVENTION--.

Page 8, before line 4, please insert:

--BRIEF DESCRIPTION OF THE FIGURES OF THE DRAWINGS--.

Page 8, before line 25, please insert:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

IN THE CLAIMS:

Please replace Claims 4, 6 and 8-13 as follows:

4. (Amended) Control method according to Claim 1, characterized in that the ellipsometric measurement is one with phase modulation.

6. (Amended) Control method according to Claim 1, characterized in that the ellipsometric measurement is carried out using the method called "rotating polarizer" method.

8. (Amended) Control method according to Claim 1, characterized in that the ellipsometric measurement is a multiwavelength measurement.

9. (Amended) Control method according to Claim 1, characterized in that the reference values form a theoretically determined path.

10. (Amended) Control method according to Claim 1, characterized in that the reference values form an experimentally determined path.

11. (Amended) Control method according to Claim 1, characterized in that the reference values are discrete points corresponding to the instants of fabrication of the thin layers with respect to the time t_0 .

12. (Amended) Control method according to Claim 1, characterized in that the path traveled is adjusted by a polynomial of order between 1 and 5.

13. (Amended) Control method according to Claim 1, characterized in that the reference values are determined by measurement, using the succession of the following steps:

- measurement of a known layer on a simple substrate;
- measurement of the same known layer on an industrial substrate;
- measurement of the thin-film structure to be controlled.

Please add the following new Claims 14-33:

--14. (New) Control method according to Claim 2, characterized in that the ellipsometric measurement is one with phase modulation.

15. (New) Control method according to Claim 3, characterized in that the ellipsometric measurement is one with phase modulation.

16. (New) Control method according to Claim 14, characterized in that the measured variables are, respectively:

$$I_s = (\sin 2\Psi \sin \Delta) \text{ and}$$

$$I_c = (\sin 2\Psi \cos \Delta) \text{ or } I_c = \cos 2\Psi.$$

17. (New) Control method according to Claim 14, characterized in that the measured variables are, respectively:

$$I_s = (\sin 2\Psi \sin \Delta) \text{ and}$$

$$I_c = (\sin 2\Psi \cos \Delta) \text{ or } I_c = \cos 2\Psi.$$

18. (New) Control method according to Claim 2, characterized in that the ellipsometric measurement is carried out using the method called “rotating polarizer” method.

19. (New) Control method according to Claim 3, characterized in that the ellipsometric measurement is carried out using the method called “rotating polarizer” method.

20. (New) Control method according to Claim 18, characterized in tht the measured variables are $\tan \Psi$ and $\cos \Delta$.

21. (New) Control method according to Claim 19, characterized in tht the measured variables are $\tan \Psi$ and $\cos \Delta$.

22. (New) Control method according to Claim 2, characterized in that the ellipsometric measurement is a multiwavelength measurement.

23. (New) Control method according to Claim 3, characterized in that the ellipsometric measurement is a multiwavelength measurement.

24. (New) Control method according to Claim 2, characterized in that the reference values form a theoretically determined path.

25. (New) Control method according to Claim 3, characterized in that the reference values form a theoretically determined path.

26. (New) Control method according to Claim 2, characterized in that the reference values form an experimentally determined path.

27. (New) Control method according to Claim 3, characterized in that the reference values form an experimentally determined path.

28. (New) Control method according to Claim 2, characterized in that the reference values are discrete points corresponding to the instants of fabrication of the thin layers with respect to the time t_0 .

29. (New) Control method according to Claim 3, characterized in that the reference values are discrete points corresponding to the instants of fabrication of the thin layers with respect to the time t_0 .

30. (New) Control method according to Claim 2, characterized in that the path traveled is adjusted by a polynomial of order between 1 and 5.

31. (New) Control method according to Claim 3, characterized in that the path traveled is adjusted by a polynomial of order between 1 and 5.

32. (New) Control method according to Claim 2, characterized in that the reference values are determined by measurement, using the succession of the following steps:

- measurement of a known layer on a simple substrate;
- measurement of the same known layer on an industrial substrate;
- measurement of the thin-film structure to be controlled.

33. (New) Control method according to Claim 3, characterized in that the reference values are determined by measurement, using the succession of the following steps:

- measurement of a known layer on a simple substrate;
- measurement of the same known layer on an industrial substrate;
- measurement of the thin-film structure to be controlled.--

REMARKS


Entry of the foregoing and consideration of the subject matter identified in caption are respectfully requested. The above amendments have been made to the specification to insert appropriate headings, and Claims 4, 6 and 8-13 have been amended to remove the multiple dependencies. New Claims 14-33 have accordingly been added and correspond to the subject matter of the original claims.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his or her earliest convenience.

A favorable consideration on the merits is believed to be next in order, and is earnestly solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: 
E. Joseph Gess
Registration No. 28,510

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

Date: August 6, 2001

Attachment to PRELIMINARY AMENDMENT dated August 6, 2001

Marked-up Claims 4, 6 and 8-13

Please amend Claims 4, 6 and 8-13 as follows:

4. (Amended) Control method according to Claim 1 [one of Claims 1 to 3], characterized in that the ellipsometric measurement is one with phase modulation.
6. (Amended) Control method according to Claim 1 [one of Claims 1 to 3], characterized in that the ellipsometric measurement is carried out using the method called "rotating polarizer" method.
8. (Amended) Control method according to Claim 1 [any one of Claims 1 to 7], characterized in that the ellipsometric measurement is a multiwavelength measurement.
9. (Amended) Control method according to Claim 1 [any one of Claims 1 to 8], characterized in that the reference values form a theoretically determined path.
10. (Amended) Control method according to Claim 1 [any one of Claims 1 to 8], characterized in that the reference values form an experimentally determined path.

Attachment to PRELIMINARY AMENDMENT dated August 6, 2001

Marked-up Claims 4, 6 and 8-13

11. (Amended) Control method according to Claim 1 [any one of Claims 1 to 10], characterized in that the reference values are discrete points corresponding to the instants of fabrication of the thin layers with respect to the time t_0 .

12. (Amended) Control method according to Claim 1 [any one of Claims 1 to 11], characterized in that the path traveled is adjusted by a polynomial of order between 1 and 5.

13. (Amended) Control method according to Claim 1 [any one of Claims 1 to 12], characterized in that the reference values are determined by measurement, using the succession of the following steps:

- measurement of a known layer on a simple substrate;
- measurement of the same known layer on an industrial substrate;
- measurement of the thin-film structure [structre] to be controlled.